

=> fil reg

FILE 'REGISTRY' ENTERED AT 17:35:25 ON 29 JAN 2002  
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Jan Delaval  
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Biotechnology & Chemical Library  
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jan.delaval@uspto.gov

STRUCTURE FILE UPDATES: 28 JAN 2002 HIGHEST RN 387816-30-0  
DICTIONARY FILE UPDATES: 28 JAN 2002 HIGHEST RN 387816-30-0

TSCA INFORMATION NOW CURRENT THROUGH July 7, 2001

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Calculated physical property data is now available. See HELP PROPERTIES  
for more information. See STNote 27, Searching Properties in the CAS  
Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

The P indicator for Preparations was not generated for all of the  
CAS Registry Numbers that were added to the H/Z/CA/CAPLUS files between  
12/27/01 and 1/23/02. Use of the P indicator in online and SDI searches  
during this period, either directly appended to a CAS Registry Number  
or by qualifying an L-number with /P, may have yielded incomplete results.  
As of 1/23/02, the situation has been resolved. Also, note that searches  
conducted using the PREP role indicator were not affected.

Customers running searches and/or SDIs in the H/Z/CA/CAPLUS files  
incorporating CAS Registry Numbers with the P indicator between 12/27/01  
and 1/23/02, are encouraged to re-run these strategies. Contact the  
CAS Help Desk at 1-800-848-6533 in North America or 1-614-447-3698,  
worldwide, or send an e-mail to [help@cas.org](mailto:help@cas.org) for further assistance or to  
receive a credit for any duplicate searches.

=> d ide can tot

L67 ANSWER 1 OF 7 REGISTRY COPYRIGHT 2002 ACS

RN 9025-39-2 REGISTRY

CN Lyase, heparin (9CI) (CA INDEX NAME)

OTHER NAMES:

CN E.C. 3.2.1.19

CN E.C. 4.2.2.7

CN Heparin eliminase

CN Heparin lyase

CN Heparin lyase I

CN Heparinase

CN Heparinase I

DR 37290-85-0

MF Unspecified

CI MAN

LC STN Files: ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, BIOBUSINESS,  
BIOSIS, BIOTECHNO, CA, CAPLUS, CBNB, CEN, CHEMCATS, CIN, CSCHEM, DDFU,  
DRUGNL, DRUGPAT, DRUGU, DRUGUPDATES, EMBASE, IFICDB, IFIPAT, IFIUDB,  
PROMT, TOXCENTER, TOXLIT, USPATFULL

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

264 REFERENCES IN FILE CA (1967 TO DATE)

7 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

266 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 136:58883

REFERENCE 2: 136:2475

REFERENCE 3: 135:322723  
REFERENCE 4: 135:314489  
REFERENCE 5: 135:300403  
REFERENCE 6: 135:286641  
REFERENCE 7: 135:273169  
REFERENCE 8: 135:179758  
REFERENCE 9: 135:177020  
REFERENCE 10: 135:147424

L67 ANSWER 2 OF 7 REGISTRY COPYRIGHT 2002 ACS

RN 9005-49-6 REGISTRY

CN Heparin (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN .alpha.-Heparin

CN Bemiparin

CN Certoparin

CN Clexane

CN Clivarin

CN Clivarine

CN CY 216

CN CY 222

CN Dalteparin

CN Enoxaparin

CN Fluxum

CN FR 860

CN Fragmin A

CN Fragmin B

CN Fraxiparin

CN Heparin sulfate

CN Heparinic acid

CN KB 101

CN Multiparin

CN Novoheparin

CN OP 386

CN OP 622

CN Pabyrn

CN Parnaparin

CN Parvoparin

CN Reviparin

CN Sandoparin

CN Sublingula

CN Vetren

CN Vitrum AB

DR 9075-96-1, 11078-24-3, 11129-39-8, 104521-37-1, 37324-73-5, 91449-79-5

MF Unspecified

CI PMS, COM, MAN

PCT Manual registration, Polyester, Polyester formed

LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO,  
CA, CABA, CANCERLIT, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMLIST,  
CIN, CSCHEM, DDFU, DIOGENES, DRUGNL, DRUGPAT, DRUGU, DRUGUPDATES,  
EMBASE, HSDB\*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK\*, MSDS-OHS,  
NAPRALERT, NIOSHTIC, PHAR, PHARMASEARCH, PIRA, PROMT, RTECS\*, TOXCENTER,  
TOXLIT, USAN, USPAT2, USPATFULL

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, WHO

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

17736 REFERENCES IN FILE CA (1967 TO DATE)

1770 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
17754 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 136:74708  
REFERENCE 2: 136:74697  
REFERENCE 3: 136:74695  
REFERENCE 4: 136:74551  
REFERENCE 5: 136:74543  
REFERENCE 6: 136:70086  
REFERENCE 7: 136:69730  
REFERENCE 8: 136:68405  
REFERENCE 9: 136:67862  
REFERENCE 10: 136:66177

L67 ANSWER 3 OF 7 REGISTRY COPYRIGHT 2002 ACS

RN 7783-20-2 REGISTRY

CN Sulfuric acid diammonium salt (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN Ammonium sulfate

CN Ammonium sulfate ((NH4)2SO4)

CN Ammonium sulphate

CN Coaltrol LPA 40

CN Diammonium sulfate

CN Diammonium sulphate

CN Dolamin

CN Liase

CN Nonnen R 999-10

CN Para-Go

CN Sulfuric acid ammonium salt (1:2)

CN Sulfuric acid, diammonium salt

DR 64006-53-7, 82168-61-4, 44071-93-4

MF H3 N . 1/2 H2 O4 S

CI COM

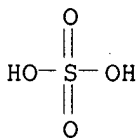
LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM\*, DIOGENES, DIPPR\*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN\*, HSDB\*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK\*, MSDS-OHS, NIOSHTIC, PDLCOM\*, PIRA, PROMT, RTECS\*, TOXCENTER, TOXLIT, TRCTHERMO\*, TULSA, ULIDAT, USPAT2, USPATFULL, VETU, VTB

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

CRN (7664-93-9)



14588 REFERENCES IN FILE CA (1967 TO DATE)

101 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

14603 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 136:74698

REFERENCE 2: 136:73939

REFERENCE 3: 136:73590

REFERENCE 4: 136:72558

REFERENCE 5: 136:69070

REFERENCE 6: 136:68776

REFERENCE 7: 136:68774

REFERENCE 8: 136:68773

REFERENCE 9: 136:68767

REFERENCE 10: 136:68754

L67 ANSWER 4 OF 7 REGISTRY COPYRIGHT 2002 ACS

RN 7632-05-5 REGISTRY

CN Phosphoric acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN Armite

CN Buromin

CN Hy-Phos

CN Instant Calgon

CN Phosphosoda

CN Sodium orthophosphate

CN Sodium phosphate

CN Turrixin ST

DR 12001-19-3, 8000-93-9

MF H3 O4 P . x Na

CI COM

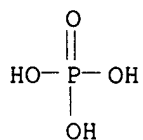
LC STN Files: ADISNEWS, AGRICOLA, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMLIST, CIN, DIOGENES, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN\*, IFICDB, IFIPAT, IFIUDB, MEDLINE, MSDS-OHS, NIOSHTIC, PDLCOM\*, PIRA, PROMT, RTECS\*, TOXCENTER, TOXLIT, TULSA, USPAT2, USPATFULL

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

CRN (7664-38-2)



● x Na

2084 REFERENCES IN FILE CA (1967 TO DATE)

25 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

2086 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 136:71864  
REFERENCE 2: 136:58807  
REFERENCE 3: 136:57983  
REFERENCE 4: 136:44493  
REFERENCE 5: 136:31722  
REFERENCE 6: 136:21956  
REFERENCE 7: 136:21522  
REFERENCE 8: 136:20551  
REFERENCE 9: 136:8142  
REFERENCE 10: 136:2500

L67 ANSWER 5 OF 7 REGISTRY COPYRIGHT 2002 ACS

RN 3458-28-4 REGISTRY

CN D-Mannose (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Mannose, D- (8CI)

OTHER NAMES:

CN (+)-Mannose

CN Carubinoase

CN D(+)-Mannose

CN Mannose

CN Seminose

AR 530-26-7

FS STEREOSEARCH

DR 147-74-0

MF C6 H12 O6

CI COM

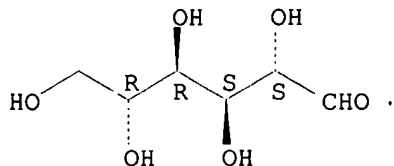
LC STN Files: ADISNEWS, AGRICOLA, BEILSTEIN\*, BIOBUSINESS, BIOSIS,  
BIOTECHNO, CA, CABA, CAOLD, CAPLUS, CASREACT, CEN, CHEMCATS,  
CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, DETHERM\*, EMBASE, GMELIN\*, HODOC\*,  
IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT,  
NIOSTIC, PIRA, PROMT, SPECINFO, SYNTHLINE, TOXCENTER, TOXLIT, TULSA,  
USPATFULL

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry. Rotation (+).



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

10556 REFERENCES IN FILE CA (1967 TO DATE)

527 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

10579 REFERENCES IN FILE CAPLUS (1967 TO DATE)

7 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 136:70024  
 REFERENCE 2: 136:69089  
 REFERENCE 3: 136:68810  
 REFERENCE 4: 136:68784  
 REFERENCE 5: 136:68644  
 REFERENCE 6: 136:68377  
 REFERENCE 7: 136:66996  
 REFERENCE 8: 136:66914  
 REFERENCE 9: 136:66913  
 REFERENCE 10: 136:66860

L67 ANSWER 6 OF 7 REGISTRY COPYRIGHT 2002 ACS

RN 99-20-7 REGISTRY

CN .alpha.-D-Glucopyranoside, .alpha.-D-glucopyranosyl (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Trehalose (8CI)

OTHER NAMES:

CN .alpha.,.alpha.'-D-Trehalose

CN .alpha.,.alpha.-Trehalose

CN .alpha.-D-Trehalose

CN .alpha.-Trehalose

CN D-(+)-Trehalose

CN D-Trehalose

CN Ergot sugar

CN Mycose

CN Natural trehalose

CN Treha

CN Trehaose

FS STEREOSEARCH

DR 229966-89-6

MF C12 H22 O11

CI COM

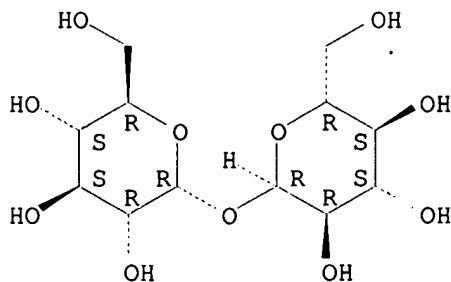
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN\*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMLIST, CIN, CSCHEM, DDFU, DETHERM\*, DRUGU, EMBASE, GMELIN\*, HODOC\*, IFICDB, IFIUDB, IPA, MEDLINE, MRCK\*, NAPRALERT, PIRA, PROMT, SPECINFO, TOXCENTER, TOXLIT, TULSA, USPATFULL

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry. Rotation (+).



## \*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

4709 REFERENCES IN FILE CA (1967 TO DATE)  
262 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
4723 REFERENCES IN FILE CAPLUS (1967 TO DATE)  
64 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 136:77485  
REFERENCE 2: 136:74683  
REFERENCE 3: 136:74655  
REFERENCE 4: 136:74308  
REFERENCE 5: 136:69121  
REFERENCE 6: 136:68768  
REFERENCE 7: 136:67465  
REFERENCE 8: 136:66671  
REFERENCE 9: 136:65213  
REFERENCE 10: 136:58832

L67 ANSWER 7 OF 7 REGISTRY COPYRIGHT 2002 ACS

RN 69-65-8 REGISTRY

CN D-Mannitol (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Cordycepic acid (6CI, 7CI)

CN Mannitol, D- (8CI)

OTHER NAMES:

CN D-(-)-Mannitol

CN Diosmol

CN Isotol

CN Maniton S

CN Manna sugar

CN Mannidex

CN Mannigen

CN Mannistol

CN Mannit

CN Mannite

CN Mannitol

CN Mannitolium

CN Mannogem 2080

CN Marine Crystal

CN Osmitrol

CN Osmosal

FS STEREOSEARCH

DR 123897-58-5, 75398-80-0, 85085-15-0

MF C6 H14 O6

CI COM

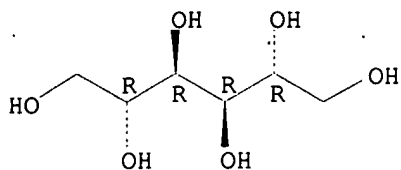
LC STN Files: ADISNEWS, AGRICOLA, BEILSTEIN\*, BIOBUSINESS, BIOSIS,  
BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CEN, CHEMCATS,  
CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM\*, DIOGENES,  
DRUGU, EMBASE, GMELIN\*, HODOC\*, HSDB\*, IFICDB, IFIPAT, IFIUDB, IPA,  
MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM\*, PHARMASEARCH,  
PIRA, PROMT, RTECS\*, SPECINFO, TOXCENTER, TOXLIT, TULSA, USAN, USPAT2,  
USPATFULL, VETU

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

10888 REFERENCES IN FILE CA (1967 TO DATE)  
 258 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 10921 REFERENCES IN FILE CAPLUS (1967 TO DATE)  
 2 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 136:74682  
 REFERENCE 2: 136:74655  
 REFERENCE 3: 136:74628  
 REFERENCE 4: 136:74590  
 REFERENCE 5: 136:74501  
 REFERENCE 6: 136:69521  
 REFERENCE 7: 136:69099  
 REFERENCE 8: 136:69034  
 REFERENCE 9: 136:68875  
 REFERENCE 10: 136:67487

=> d his

(FILE 'HOME' ENTERED AT 17:16:53 ON 29 JAN 2002)  
 SET COST OFF

FILE 'REGISTRY' ENTERED AT 17:17:05 ON 29 JAN 2002  
 E HEPARINASE/CN

L1 1 S E3  
 L2 3 S E5, E7, E9  
 L3 2 S 9005-49-6 OR 9041-08-1  
 E GLUCONASE/CN  
 E GLUCANASE/CN  
 L4 1 S E3  
 L5 2 S E24, E25  
 L6 1109 S GLUCANASE  
 L7 1106 S L6 NOT L4, L5  
 L8 33 S L7 NOT SQL/FA  
 L9 28 S L8 NOT MXS/CI  
 L10 18 S L9 AND GLUCANASE/INS.HP  
 L11 10 S L9 NOT L10  
 L12 1 S TREHALOSE/CN  
 L13 19 S C12H22O11/MF AND GLUCOPYRANOSIDE AND GLUCOPYRANOSYL  
 L14 10 S L13 NOT (LABELED OR 11C# OR 13C# OR 14C# OR (D OR T)/ELS)  
 L15 9 S L14 NOT OC4/ES  
 L16 9 S L12, L15  
 L17 3 S 69-65-8 OR 643-01-6 OR 133-43-7  
 L18 3 S 3458-28-4 OR 10030-80-5 OR 40866-07-7



E AMMONIUM SULFATE/CN  
 L19 1 S E3  
 L20 785 S 7664-93-9/CRN AND H3N  
 L21 33 S L20 AND 2/NC  
 L22 15 S L21 AND H2O4S  
 L23 10 S L22 NOT (MNS/CI OR 15N OR 13N)  
 L24 25 S L16-L19,L23  
 L25 1 S 7664-38-2  
 L26 1336 S 7664-38-2/CRN AND NA/ELS  
 L27 18 S L26 AND H3O4P AND 2/NC  
 L28 13 S L27 NOT (FNA OR MNS/CI OR PROPANEDIOL)  
 L29 1 S SODIUM CHLORIDE/CN  
 E TRIS/CN  
 L30 1 S E4  
 L31 15 S L28,L29,L30

FILE 'HCAPLUS' ENTERED AT 17:26:22 ON 29 JAN 2002

L32 339 S L1 OR L2  
 L33 991 S HEPARINASE  
 L34 90 S HEPARIN LYASE  
 L35 1069 S L32-L34  
 L36 8 S L35 AND L24  
 L37 17 S L35 AND (TREHALOSE OR MANNITOL OR MANNOSE OR AMMONIUM() (SULFA  
 L38 17 S L36,L37  
 L39 1 S L38 AND (L31 OR NACL OR (NA OR SODIUM) ()CHLORIDE OR TRIS OR (  
 L40 5 S L38 AND (L3 OR HEPARIN)  
 L41 1 S L38 AND (L4 OR L5 OR L11 OR GLUCANASE)  
 L42 5 S L39-L41  
 L43 1 S L42 AND ADDITIVE  
 L44 1 S L38 AND ADDITIVE  
 L45 1 S L43,L44  
 L46 16745 S L35 OR L4 OR L5 OR L11 OR GLUCANASE  
 L47 1 S L38 AND (L31 OR NACL OR (NA OR SODIUM) ()CHLORIDE OR TRIS OR (  
 L48 1 S L45,L47  
 L49 399 S L46 AND ADDITIVE  
 L50 908 S L46 AND STABIL?  
 L51 58 S L49 AND L50  
 L52 52 S L51 AND (PY<=1999 OR PRY<=1999 OR AY<=1999)  
 E ANTIGNANI A/AU  
 L53 2 S E4-E5  
 E CHENG E/AU  
 L54 237 S E3-E13,E51  
 E EVANS J/AU  
 L55 321 S E3,E35-E38  
 E EVANS JEF/AU  
 L56 10 S E7,E14  
 E GRIPPI N/AU  
 L57 2 S E4  
 E WONG B/AU  
 L58 39 S E3,E17,E18  
 E WONG BRYAN/AU  
 L59 7 S E5-E7  
 L60 1562 S (BECTON OR DICKINSON)/PA,CS  
 L61 8 S L46 AND L53-L60  
 L62 1 S L61 AND L49  
 L63 2 S L61 AND STABIL?  
 L64 2 S L62,L63  
 L65 1 S L64 NOT WINTERS ?/AU  
 L66 1 S L48,L65  
 SEL HIT RN

FILE 'REGISTRY' ENTERED AT 17:35:09 ON 29 JAN 2002

L67 7 S E1-E7

FILE 'REGISTRY' ENTERED AT 17:35:25 ON 29 JAN 2002

=> fil hcaplus  
FILE 'HCAPLUS' ENTERED AT 17:35:34 ON 29 JAN 2002  
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FILE COVERS 1907 - 29 Jan 2002 VOL 136 ISS 5  
FILE LAST UPDATED: 28 Jan 2002 (20020128/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

This file supports REGISTRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

HCAplus now provides online access to patents and literature covered in CA from 1907 to the present. Bibliographic information and abstracts were added in 2001 for over 3.8 million records from 1907-1966.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

The P indicator for Preparations was not generated for all of the CAS Registry Numbers that were added to the H/Z/CA/CAplus files between 12/27/01 and 1/23/02. Use of the P indicator in online and SDI searches during this period, either directly appended to a CAS Registry Number or by qualifying an L-number with /P, may have yielded incomplete results. As of 1/23/02, the situation has been resolved. Also, note that searches conducted using the PREP role indicator were not affected.

=> d all 166

L66 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2002 ACS  
AN 1999:196433 HCAPLUS  
DN 130:220188

TI **Additive** formulation comprising **heparin**-specific **glucanase** and use thereof

IN **Antignani, Antoinette F.; Cheng, Emy; Evans, Jeffrey M.; Grippi, Nicholas A.; Wong, Bryan S.**

PA **Becton, Dickinson and Company, USA**

SO Eur. Pat. Appl., 9 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM G01N033-86

ICS C12Q001-56; B01L003-00; C12N009-88

CC 9-16 (Biochemical Methods)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 902289	A2	19990317	EP 1998-114886	19980807
	EP 902289	A3	20001220		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	CA 2242693	AA	19990304	CA 1998-2242693	19980709
	AU 9879892	A1	19990318	AU 1998-79892	19980811

	JP 11139987	A2	19990525	JP 1998-251604	19980904
	US 6187553	B1	20010213	US 1999-304382	19990504
	US 2001001708	A1	20010524	US 2001-755269	20010105
PRAI	US 1997-923838	A	19970904		
	US 1999-304382	A1	19990504		

AB An **additive** formulation comprising **heparinase** and **trehalose**, a method for using the formulation and a device contg. the formulation. The **additive** formulation is useful in substantially neutralizing residual **heparin** from a blood sample when used in a blood collection tube without interfering with the clin. anal. of the blood sample.

ST formulation comprising **heparin glucanase**

IT Apparatus

Blood analysis

Buffers

Gamma ray

**Stabilizing agents**

(**additive** formulation comprising **heparin-specific glucanase** and use thereof)

IT Blood

(collection tube; **additive** formulation comprising **heparin-specific glucanase** and use thereof)

IT 69-65-8, D-Mannitol 99-20-7, Trehalose

124-38-9, Carbon dioxide, uses 1333-74-0, Hydrogen, uses

3458-28-4, D-Mannose 7632-05-5, Sodium

phosphate 7783-20-2, Ammonium sulfate

, uses 9025-39-2, Heparinase

RL: NUU (Other use, unclassified); USES (Uses)

(**additive** formulation comprising **heparin-specific glucanase** and use thereof)

IT 9005-49-6, Heparin, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)

(**additive** formulation comprising **heparin-specific glucanase** and use thereof)

=> fil wpix

FILE 'WPIX' ENTERED AT 17:43:07 ON 29 JAN 2002

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FILE LAST UPDATED: 28 JAN 2002

<20020128/UP>

MOST RECENT DERWENT UPDATE

200206

<200206/DW>

DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> SDI'S MAY BE RUN ON EVERY UPDATE OR MONTHLY AS OF JUNE 2001.

(EVERY UPDATE IS THE DEFAULT). FOR PRICING INFORMATION

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L87 ANSWER 1 OF 2 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1999-169346 [15] WPIX

DNN N1999-123495

DNC C1999-049727

TI New additive formulation comprising heparin-specific glucanase - useful for neutralising residual heparin from blood sample.

DC B04 D16 S03

IN ANTIGNANI, A F; CHENG, E; EVANS, J M; GRIPPI, N A; WONG, B S

PA (BECT) BECTON DICKINSON & CO; (ANTI-I) ANTIGNANI A F; (CHEN-I) CHENG E;

(EVAN-I) EVANS J M; (GRIP-I) GRIPPI N A; (WONG-I) WONG B S

CYC 29

PI EP 902289 A2 19990317 (199915)\* EN 9p G01N033-86  
 R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT  
 RO SE SI

AU 9879892 A 19990318 (199923) G01N033-48  
 JP 11139987 A 19990525 (199931) 25p A61K038-46  
 CA 2242693 A 19990304 (199933) C12N009-88  
 US 6187553 B1 20010213 (200111) C12Q001-56 <--  
 US 2001001708 A1 20010524 (200130)# C12N009-00

ADT EP 902289 A2 EP 1998-114886 19980807; AU 9879892 A AU 1998-79892 19980811;  
 JP 11139987 A JP 1998-251604 19980904; CA 2242693 A CA 1998-2242693  
 19980709; US 6187553 B1 Cont of US 1997-923838 19970904, US 1999-304382  
 19990504; US 2001001708 A1 Cont of US 1999-304382 19990504, US 2001-755269  
 20010105

PRAI US 1997-923838 19970904; US 1999-304382 19990504; US 2001-755269  
 20010105

IC ICM A61K038-46; C12N009-00; C12N009-88; C12Q001-56; G01N033-48;  
 G01N033-86  
 ICS A61J001-05; B01L003-00

AB EP 902289 A UPAB: 19990416

NOVELTY - The additive formulation comprises a degradative glucanase enzyme specific for heparin and a stabiliser.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (1) a method for eliminating the physiological effects of heparin on a blood components in a mixture of blood components and heparin in a blood collection tube comprising: (a) preparing the additive formulation as above; (b) spray coating the additive formulation to the inner wall of a blood collection tube; (c) drying the applied formulation by applying an airjet or forced air to the inner-wall of the coated tube at about 25-30 deg. C and for 5-10 minutes; (d) vacuum drying the inner-wall of the tube for 2 hours; (e) removing the oxygen from the inner-wall of the tube by back flushing the tube with gaseous mixture of CO<sub>2</sub> and H<sub>2</sub>; (f) stoppering the tube; (g) irradiating the tubes within 2-5 hours at 1.5 Mrads; (h) adding a blood sample containing heparin into the tube; (i) mixing the specimen in the tube with the additive formulation by about 5-10 manual conversions; and (j) allowing the specimen to clot; (2) a tube for preparing a heparin specimen for clotting comprising a top end, a bottom end, a side-well extending from the top end to the bottom end and including an exterior and interior surface, a spray coated additive formulation comprising a mixture of a buffer, **heparinase** and **trehalose** on the interior surface of the tube; and (3) a method for making a tube for handling a heparin specimen for clotting comprising: (a) providing a container as above; (b) preparing the additive formulation comprising a mixture of **sodium phosphate**, **heparinase** and **trehalose**; (c) dispensing the formulation to the inner wall surface of the tube in a fine mist; (d) drying the formulation by applying forced air; (e) vacuum drying the inner wall of the tube for about 2 hours at 35 deg. C at about 600 mm Hg; (f) removing oxygen from the tube by back flushing with a gaseous mixture of CO<sub>2</sub>/H<sub>2</sub> at a mixture of about 80:20; (g) stoppering the tube; and (h) irradiating the tube and formulation by gamma irradiation.

USE - The additive formulation is useful as an additive in a tube to neutralise residual heparin in specimens taken from heparinised patients and accelerate clotting.

ADVANTAGE - The additive formulation is irradiation stable and achieves faster and more complete heparin neutralisation of heparinised blood therefore reducing the handling time required to manually remove heparin from patient specimens. It is also useful in removing heparin without interfering with the clinical analysis.

Dwg.0/2

FS CPI EPI

FA AB

MC CPI: B04-B04D5; B04-C02E1; B04-L06; B05-C01; B07-A02B; B10-A07; B11-C06;  
 B14-F08; D05-A02D; D05-C11  
 EPI: S03-E13D; S03-E14H1

L87 ANSWER 2 OF 2 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD  
 AN 1992-365996.[44] WPIX  
 DNC C1992-162475  
 TI Eliminating physiological effects of heparin on blood components -  
 comprises treating blood contg. heparin with **stabilised**  
**heparinase** prepn., free of anticoagulant component.  
 DC B04 D16  
 IN HEFT, R A; LEWIS, N T; ZIMMERMANN, J J  
 PA (IBEX) IBEX TECHNOLOGIES INC; (ZIMM-I) ZIMMERMANN J J; (IBEX-N) IBEX  
 TECHNOLOGIES INC  
 CYC 19  
 PI WO 9217203 A1 19921015 (199244)\* EN 29p A61K037-56  
 RW: AT BE CH DE DK ES FR GB GR IT LU MC NL SE  
 W: AU CA JP  
 AU 9217713 A 19921102 (199305) A61K037-56  
 EP 537325 A1 19930421 (199316) EN 29p A61K037-56  
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 JP 05507297 W 19931021 (199347) 29p A61K037-54  
 US 5262325 A 19931116 (199347) 8p C07K003-00  
 US 5338677 A 19940816 (199432) 8p C12N009-24  
 AU 658418 B 19950413 (199524) A61K037-56  
 JP 2542780 B2 19961009 (199645) 9p A61K035-14  
 CA 2083162 C 19980811 (199843) C12N009-88  
 EP 537325 B1 19991103 (199951) EN A61K038-51  
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 DE 69230243 E 19991209 (200004) A61K038-51  
 ES 2141106 T3 20000316 (200021) A61K038-51  
 ADT WO 9217203 A1 WO 1992-US2724 19920403; AU 9217713 A AU 1992-17713  
 19920403, WO 1992-US2724 19920403; EP 537325 A1 EP 1992-910865 19920403,  
 WO 1992-US2724 19920403; JP 05507297 W JP 1992-510024 19920403, WO  
 1992-US2724 19920403; US 5262325 A US 1991-680330 19910404; US 5338677 A  
 Div ex US 1991-680330 19910404, US 1993-153134 19931115; AU 658418 B AU  
 1992-17713 19920403; JP 2542780 B2 JP 1992-510024 19920403, WO 1992-US2724  
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 1992-910865 19920403, WO 1992-US2724 19920403; DE 69230243 E DE  
 1992-630243 19920403, EP 1992-910865 19920403, WO 1992-US2724 19920403; ES  
 2141106 T3 EP 1992-910865 19920403  
 FDT AU 9217713 A Based on WO 9217203; EP 537325 A1 Based on WO 9217203; JP  
 05507297 W Based on WO 9217203; US 5338677 A Div ex US 5262325; AU 658418  
 B Previous Publ. AU 9217713, Based on WO 9217203; JP 2542780 B2 Previous  
 Publ. JP 05507297, Based on WO 9217203; EP 537325 B1 Based on WO 9217203;  
 DE 69230243 E Based on EP 537325, Based on WO 9217203; ES 2141106 T3 Based  
 on EP 537325  
 PRAI US 1991-680330 19910404  
 REP 2.Jnl.Ref; EP 370958; WO 8705333; WO 8802400  
 IC ICM A61K035-14; A61K037-54; A61K037-56; A61K038-51; C07K003-00;  
 C12N009-88  
 ICS A61K038-46; C12N001-00; C12N001-12; C12Q001-56; G01N033-86  
 ICA C12N009-24; C12Q001-34  
 ICI C12N009-24, C12R001:20  
 AB WO 9217203 A UPAB: 19931116  
 Eliminating the physiological effects of heparin on blood components,  
 comprises treating blood contg. heparin with a stabilised  
**heparinase** prepn., free of an anticoagulant component having  
 optimal activity at pH of 6.7-7; NaCl concn. of 0.1, and 37  
 deg.C.  
 The **heparinase** may be purified from cultures of  
 Flavobacterium heparinum by affinity chromatography using a polysulphated  
 resin. The **heparinase** formulation may be prepd. by lyophilising  
 0.05-3 IU of anticoagulant free **heparinase** in the presence of  
 0.5-1 mg (NH4)2SO4/IU **heparinase**.  
 A stabilised **heparinase** prepn., free of an anticoagulant  
 component, has optimal activity at pH of 6.5-7; NaCl concn. of  
 0.1, and 37 deg.C.  
 USE/ADVANTAGE - The **heparinase** prepn. can be used to

quickly and completely neutralise heparin over a wide range of concns. both in vitro and in vitro. The **heparinase** is free of coagulants altering coagulation times and is stable for an extended period of time at room temp. The **heparinase** is useful in vitro to eliminate the interference in haematological assays due to the presence of heparin. The **heparinase** is also useful for the in vivo neutralisation of heparin during surgical procedures.

Dwg.0/1

FS CPI

FA AB

MC CPI: B04-B02C3; B12-K04; D05-C08

ABEQ JP 05507297 W UPAB: 19940111

The elimination comprises treating blood contg. heparin with a stabilised **heparinase** prepn., free of an anticoagulant component having optimal activity at pH of 6.7-7; and NaCl concn. of 0.1, and 37 deg.C.

The **heparinase** may be pref purified from cultures of Flavobacterium heparinum by affinity chromatography using a polysulphated resin. The **heparinase** formulation may be prepd. by lyophilising 0.05-3 IU of anticoagulant free **heparinase** in 0.5-1 mg (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> (2SO<sub>4</sub>/IU **heparinase**).

A stabilised **heparinase** prepn. pref. free of an anticoagulant component, has optimal activity at pH of 6.5-7; and NaCl concn. of 0.1, and 37 deg.C.

USE/ADVANTAGE - The **heparinase** prepn. may be used to quickly and completely neutralise heparin over a wide range of concns. in vitro and in vitro. The **heparinase** is free of coagulants altering coagulation times and is stable for an extended period at room temp. Useful in vitro to eliminate the interference in haematological assays due to the presence of heparin. Also useful for the in vivo neutralisation of heparin during surgical procedures.

Dwg.0/1

ABEQ US 5262325 A UPAB: 19940111

**Heparinase** prepn. isolated from Flavobacterium heparinum contains no components that inhibit blood coagulation and is a reagent for eliminating heparin interference of the normal blood functions. The **heparinase** (but not an anticoagulant component) binds to a polysulphated resin at pH 7.0 (conductance 0.003-0.012 ohm-1).

Process for eliminating the physiol. effects of heparin in blood comprises contactng the blood with bacterial **heparinase**, opt. immobilised on a polysulphated resin (as above).

USE - The process facilitates invasive surgery and blood dialysis.

Dwg.0/1

Dwg.0/1

ABEQ US 5338677 A UPAB: 19940928

**Heparinase** isolated from Flavobacterium heparinum is free of anticoagulant activity. It has optimal activity of pH 6.5-7.0, salt concn. 0.1M and 37 deg. C..

USE/ADVANTAGE - Used as a clinical reagent to eliminate heparin interference of normal blood function. The **heparinase** is stable for at least 1 year, neutralises faster and more completely.

Dwg.0/1

=> fil dpci

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FILE LAST UPDATED: 18 JAN 2002

<20020118/UP>

MOST RECENT DERWENT DPCI UPDATE 200168

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L90 ANSWER 1 OF 2 DPCI COPYRIGHT 2002 DERWENT INFORMATION LTD  
 AN 1999-169346 [15] DPCI  
 DNN N1999-123495 DNC C1999-049727  
 TI New additive formulation comprising heparin-specific glucanase - useful  
 for neutralising residual heparin from blood sample.  
 DC B04 D16 S03  
 IN ANTIGNANI, A F; CHENG, E; EVANS, J M; GRIPPI, N A; WONG, B S  
 PA (BECT) BECTON DICKINSON & CO; (ANTI-I) ANTIGNANI A F; (CHEN-I) CHENG E;  
 (EVAN-I) EVANS J M; (GRIP-I) GRIPPI N A; (WONG-I) WONG B S  
 CYC 29  
 PI EP 902289 A2 19990317 (199915)\* EN 9p G01N033-86  
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 CA 2242693 A 19990304 (199933) C12N009-88  
 US 6187553 B1 20010213 (200111) C12Q001-56 <--  
 US 2001001708 A1 20010524 (200130)# C12N009-00  
 ADT EP 902289 A2 EP 1998-114886 19980807; AU 9879892 A AU 1998-79892 19980811;  
 JP 11139987 A JP 1998-251604 19980904; CA 2242693 A CA 1998-2242693  
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 19990504; US 2001001708 A1 Cont of US 1999-304382 19990504, US 2001-755269  
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 PRAI US 1997-923838 19970904; US 1999-304382 19990504; US 2001-755269  
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 IC ICM A61K038-46; C12N009-00; C12N009-88; C12Q001-56; G01N033-48;  
 G01N033-86  
 ICS A61J001-05; B01L003-00  
 FS CPI EPI  
 EXF EXAMINER'S FIELD OF SEARCH UPE: 20010504

NCL US 6187553 B1 20010213  
 000/435.130; 000/435.176; 000/435.177; 000/435.180; 000/435.188;  
 000/435.200; 000/435.269

## CTCS CITATION COUNTERS

PNC.DI	0	Cited Patents Count (by inventor)
PNC.DX	3	Cited Patents Count (by examiner)
IAC.DI	0	Cited Issuing Authority Count (by inventor)
IAC.DX	1	Cited Issuing Authority Count (by examiner)
PNC.GI	0	Citing Patents Count (by inventor)
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IAC.GI	0	Citing Issuing Authority Count (by inventor)
IAC.GX	0	Citing Issuing Authority Count (by examiner)
CRC.I	0	Cited Literature References Count (by inventor)
CRC.X	0	Cited Literature References Count (by examiner)

CDP CITED PATENTS UPD: 20010504

## Cited by Examiner

CITING PATENT	CAT	CITED PATENT	ACCNO
US 6187553	B1	US 4891319	A 1987-021994/03
PA: (QUAD-N) QUADRANT BIORESOURCES LTD; (ROSE-I) ROSER B J			

IN: ROSER, B J  
 US 5262325 A 1992-365996/44  
 PA: (IBEX) IBEX TECHNOLOGIES INC; (ZIMM-I) ZIMMERMANN J J;  
 (IBEX-N) IBEX TECHNOLOGIES INC  
 IN: HEFT, R A; LEWIS, N T; ZIMMERMANN, J J  
 US 6010911 A 1999-009450/01  
 PA: (MEDT) MEDTRONIC INC  
 IN: BAUGH, R F; LANE, C G; WILSON, A C

L90 ANSWER 2 OF 2 DPCI COPYRIGHT 2002 DERWENT INFORMATION LTD  
 AN 1992-365996 [44] DPCI  
 DNC C1992-162475  
 TI Eliminating physiological effects of heparin on blood components -  
 comprises treating blood contg. heparin with stabilised heparinase prepn.,  
 free of anticoagulant component.  
 DC B04 D16  
 IN HEFT, R A; LEWIS, N T; ZIMMERMANN, J J  
 PA (IBEX) IBEX TECHNOLOGIES INC; (ZIMM-I) ZIMMERMANN J J; (IBEX-N) IBEX  
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 EP 537325 A1 19930421 (199316) EN 29p A61K037-56  
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 US 5262325 A 19931116 (199347) 8p C07K003-00 <--  
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 JP 2542780 B2 19961009 (199645) 9p A61K035-14  
 CA 2083162 C 19980811 (199843) C12N009-88  
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 DE 69230243 E 19991209 (200004) A61K038-51  
 ES 2141106 T3 20000316 (200021) A61K038-51  
 ADT WO 9217203 A1 WO 1992-US2724 19920403; AU 9217713 A AU 1992-17713  
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 1992-US2724 19920403; US 5262325 A US 1991-680330 19910404; US 5338677 A  
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 1992-17713 19920403; JP 2542780 B2 JP 1992-510024 19920403, WO 1992-US2724  
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 1992-910865 19920403, WO 1992-US2724 19920403; DE 69230243 E DE  
 1992-630243 19920403, EP 1992-910865 19920403, WO 1992-US2724 19920403; ES  
 2141106 T3 EP 1992-910865 19920403  
 FDT AU 9217713 A Based on WO 9217203; EP 537325 A1 Based on WO 9217203; JP  
 05507297 W Based on WO 9217203; US 5338677 A Div ex US 5262325; AU 658418  
 B Previous Publ. AU 9217713, Based on WO 9217203; JP 2542780 B2 Previous  
 Publ. JP 05507297, Based on WO 9217203; EP 537325 B1 Based on WO 9217203;  
 DE 69230243 E Based on EP 537325, Based on WO 9217203; ES 2141106 T3 Based  
 on EP 537325  
 PRAI US 1991-680330 19910404  
 IC ICM A61K035-14; A61K037-54; A61K037-56; A61K038-51; C07K003-00;  
 C12N009-88  
 ICS A61K038-46; C12N001-00; C12N001-12; C12Q001-56; G01N033-86  
 ICA C12N009-24; C12Q001-34  
 ICI C12N009-24, C12R001:20  
 FS CPI

EXF EXAMINER'S FIELD OF SEARCH UPE: 19991212  
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NCL US 5338677 A 19940816  
 000/252.100; 435/200



IC EP 537325 B1 19991103  
A61K038-51

## CTCS CITATION COUNTERS

PNC.DI	0	Cited Patents Count (by inventor)
PNC.DX	9	Cited Patents Count (by examiner)
IAC.DI	0	Cited Issuing Authority Count (by inventor)
IAC.DX	4	Cited Issuing Authority Count (by examiner)
PNC.GI	1	Citing Patents Count (by inventor)
PNC.GX	6	Citing Patents Count (by examiner)
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IAC.GX	1	Citing Issuing Authority Count (by examiner)
CRC.I	0	Cited Literature References Count (by inventor)
CRC.X	31	Cited Literature References Count (by examiner)

CDP CITED PATENTS UPD: 19991212

## Cited by Examiner

CITING PATENT	CAT	CITED PATENT	ACCNO
EP 537325	A1	EP 370958	1990-165628/22
		PA: (SHKJ) RES DEV CORP JAPAN; (RIKA) RIKAGAKU KENKYUSHO	
		IN: BELLAMY, W R; HORIKOSHI, K; BELLAMY, R W	
		WO 8705333 A 1987-264129/37	
		PA: (CHIL-N) CHILDRENS MEDICAL CENT; (MASI) MASSACHUSETTS	
		INST TECHNOLOGY; (CHIL-N) CHILDRENS MED CENT; (CHIL-N)	
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		IN: FOLKMAN, J M; HANNAN, L R; LANGER, S R; THOMPSON, W R;	
		FOLKMAN, M J; HANNAN, R L; LANGER, R S; THOMPSON, R W	
		WO 8802400 A 1988-105519/15	
		PA: (MASI) MASSACHUSETTS INST TECHNOLOGY	
		IN: BERNSTEIN, H; COONEY, C L; LANGER, R S; YANG, V C	
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JP 2542780	B2	JP 2057180	A 1990-060582/09
		PA: (SEGK) SEIKAGAKU CORP; (SEGK) SEIKAGAKU KOGYO CO LTD	
		IN: KIKUCHI, H; MAEYAMA, K; YOSHIDA, K	
		JP 2503388 A 1986-322176/49	
		PA: (NIKR) NIPPON KOGAKU KK;	
		US 4863611 A 1989-332095/45	
		PA: (MASI) MASSACHUSETTS INST TECHNOLOGY	
		IN: BERNSTEIN, H; LANGER, R S; WHEATLEY, M A	
US 5262325	A	US 3950133	A 1973-26237U/19
		PA: (MLCW) MALLINCKRODT CHEM WORKS	
		US 4795703 A 1987-264129/37	
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US 5338677 A US 3950133 A 1973-26237U/19  
 PA: (MLCW) MALLINCKRODT CHEM WORKS  
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 FOLKMAN, M J; HANNAN, R L; LANGER, R S; THOMPSON, R W  
 WO 8802400 A 1988-105519/15  
 PA: (MASI) MASSACHUSETTS INST TECHNOLOGY  
 IN: BERNSTEIN, H; COONEY, C L; LANGER, R S; YANG, V C

REN LITERATURE CITATIONS UPR: 19991212

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 Citations by Examiner  
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CITING PATENT	CAT	CITED LITERATURE
EP 537325	B1	Thrombosis Research, vol. 60, no. 4, 15 November 1990, L.H. BOEHMER et al.: "Heparin degradation by a novel microbial heparinase", pages 331-336, see page 331, paragraph 2 - page 332, paragraph 1; page 332, paragraph 2 - page 333, paragraph 1; page 334, paragraphs 1-2 (cited in the application)
EP 537325	B1	J. Lab. Clin. Med., vol. 79, no. 6, June 1972, E.D. HUTT et al.: "Use of heparinase to eliminate heparin inhibition in routine coagulation assays", pages 1027-1035, see page 1027, paragraph 1 - page 1028, paragraph 1; page 1028, paragraph 3; page 1029, paragraph 2 - page 1033, paragraph 1 (cited in the application)
US 5262325	A	Rosenberg, et al., "The purification and mechanism of action of the human antithrombin-heparin cofactor"; J. Biol. Chem., 248:6490-6505.
US 5262325	A	Cumming, A. M., et al., "In vitro neutralization of heparin in plasma prior to the activated partial thromboplastin time test; an assessment of four heparin antagonists and two anion exchange resins" Thrombosis Res., 41:43-56.
US 5262325	A	Sakamoto, et al., "Heparin and bone Metabolism: Effects of heparin on bone collagenase release and activity and an application of heparin-sepharose affinity chromatography for in vitro study of bone resorption" Chemistry and Biology of Heparin; (Elsevier/North Holland Press, Amsterdam 1981).
US 5262325	A	Hutt, Ed, et al., "Use of Heparinase to eliminate heparin inhibition in routine coagulation assays" J. Lab. Clin. Med. 79:1027, 1972.
US 5262325	A	Akoum, A., et al., "Anticoagulant activity of a bacterial glycopeptide" Thrombosis Res., 60: 9-18.
US 5262325	A	Funk, C., et al., "Reptilase-R a new reagent in blood coagulation" Brit. J. Haematol., 21:43-52.
US 5262325	A	Bohmer, L. H., et al., "Heparin degradation by a novel heparinase" Thrombosis Res. 60:331-335.

US 5262325 A Klein, et al., "Heparinase. Invivo activity and immunogenecity in rabbits" J. Lab. Clin. Med., 102:8280837.

US 5262325 A Langer, et al., "In vivo activity of microbial heparinase" Trans Am Soc Artific Intern Organs, 28:387-390.

US 5262325 A Fabian, et al. "Polycations as Possible Substitutes for Protamine in Heparin Neutralization", Thrombosis Research, 17:239-247, (Pergamon Press Ltd. 1980).

US 5262325 A Langer, et al., "An Enzymatic System for Removing Heparin in Extra-Corporeal Therapy", Science, vol. 271, 261-263, (Jul. 16, 1982).

US 5262325 A Dixon et al., Enzymes, Fractionation Methods, p. 39, 1964.

US 5262325 A Galliher, P. C., et al. "Heparinase production by Flavobacterium herpauum" Appl. Envir. Microbiol., 41(2):360-365.

US 5262325 A Lindahl, et al., "Biosynthesis of Heparin" TIBS 11(5):221-225, (1986).

US 5338677 A Rosenberg, et al., "The purification and mechanism of action of the human anti-thrombin-heparin cofactor", J. Biol. Chem., 248:6490-6505

US 5338677 A Choay, J., et al., "Anti-Xa active heparin oligosaccharides" Thrombosis Res., 11:240, 1980

US 5338677 A Cumming, A. M. et al., "In vitro neutralization of heparin in plasma prior to the activated partial thromboplastin time test; an assessment of four heparin antagonists and two anion exchange resins" Thrombosis Res., 41:43-56

US 5338677 A Funk, C., et al., "Reptilase-R-a new reagent in blood coagulation" Brit. J. Haematol., 21:43-52

US 5338677 A Hutt, Ed, et al., "Use of Heparinase to eliminate heparin inhibition in routine coagulation assays" J. Lab. Clin. Med. 79:1027, 1972

US 5338677 A Akoum, A., et al., "Anticoagulant activity of a bacterial glycopeptide" Thrombosis Res., 60:9-18

US 5338677 A Galliher, P. C., et al. "Heparinase production by Flavobacterium herpauum" Appl. Envir. Microbiol. 41(2):360-365

US 5338677 A Bohmer, L. H., et al., "Heparin degradation by a novel heparinase" Thrombosis Res. 60:331-335

US 5338677 A Klein, et al., "Heparinase. Invivo activity and immunogenecity in rabbits" J. Lab Clin Med, 102:8280837

US 5338677 A Langer, et al., "In vivo activity of microbial heparinase" Trans Am Soc Artific Intern Organs, 28:387-390

US 5338677 A Fabian, et al. "Polycations as Possible Substitutes for Protamine in Heparin Neutralization", Thrombosis Research, 17:239-247, (Pergamon Press Ltd. 1980)

US 5338677 A Lander, et al., "An Enzymatic System for Removing Heparin in Extra-Corporeal Therapy", Science, vol. 271, 261-263, (Jul. 16, 1982)

US 5338677 A Dixon et al., Enzymes, Fractionation Methods, p. 39, 1964

US 5338677 A Lindahl, et al., "Biosynthesis of Heparin" TIBS 11(5):221-225, (1986)

US 5338677 A Sakamoto, et al., "Heparin and bone Metabolism: Effects of heparin on bone collagenase release and activity and an application of heparin-sepharose affiity chromatography for in vitro study of bone resorption" Chemistry and Biology of Heparin) (Elsevier/North Holland Press, Amsterdam 1981

CGP CITING PATENTS

UPG: 20010612

Cited by Inventor

CITED PATENT	CITING PATENT	ACCNO
US 5262325	A WO 9534635	A1 1996-097381/10
	PA: (IBEX-N) IBEX TECHNOLOGIES; (ZIMM-I) ZIMMERMANN J	
	IN: BENNETT, C; BLAIN, F; GU, K; MUSIL, R; SU, H;	
	ZIMMERMANN, J	

Cited by Examiner

CITED PATENT	CAT	CITING PATENT	ACCNO
US 5262325	A	US 5919693	A 1996-097381/11
		PA: (IBEX-N) IBEX TECHNOLOGIES; (ZIMM-I) ZIMMERMANN J;	
		(ZIMM-I) ZIMMERMANN J J; (IBEX-N) IBEX TECHNOLOGIES	
		CORP	
		IN: BENNETT, C; BLAIN, F; GU, K; MUSIL, R; SU, H;	
		ZIMMERMANN, J	
		US 5972712	A 1999-009450/01
		PA: (MEDT) MEDTRONIC INC	
		IN: BAUGH, R F; LANE, C G; WILSON, A C	
		US 5997863	A 1996-097456/11
		PA: (IBEX-N) IBEX TECHNOLOGIES R & D INC; (ZIMM-I)	
		ZIMMERMANN J; (IBEX-N) IBEX TECHNOLOGIES; (ZIMM-I)	
		ZIMMERMANN J J	
		IN: BENNETT, D C; BROUGHTON, R; DANAGHER, P; VLODAVSKY, I;	
		ZIMMERMANN, J; BENNETT, D; BENNETT, C	
		US 6187553	B1 1999-169346/11
		PA: (BECT) BECTON DICKINSON & CO	
		IN: ANTIGNANI, A F; CHENG, E; EVANS, J M; GRIPPI, N A;	
		WONG, B S	
		US 6217863	B1 1997-272124/21
		PA: (MASI) MASSACHUSETTS INST TECHNOLOGY	
		IN: COONEY, C L; ERNST, S; GODAVARTI, R; LANGER, R;	
		SASISEKHARAN, R; VENKATARAMAN, G	
US 5338677	A	US 6217863	B1 1997-272124/21
		PA: (MASI) MASSACHUSETTS INST TECHNOLOGY;	
		IN: COONEY, C L; ERNST, S; GODAVARTI, R; LANGER, R;	
		SASISEKHARAN, R; VENKATARAMAN, G	
WO 9217203	A1	US 5567417	A 1995-206691/27
		PA: (CHIL-N) CHILDRENS MEDICAL CENT; (MASI) MASSACHUSETTS	
		INST TECHNOLOGY	
		IN: COONEY, C L; LANGER, R S; MOSES, M A; NUGENT, M A;	
		SASISEKHARAN, R	

=&gt; d his

(FILE 'HOME' ENTERED AT 17:16:53 ON 29 JAN 2002)  
SET COST OFF

FILE 'REGISTRY' ENTERED AT 17:17:05 ON 29 JAN 2002  
E HEPARINASE/CN

L1	1 S E3
L2	3 S E5, E7, E9
L3	2 S 9005-49-6 OR 9041-08-1
	E GLUCONASE/CN
	E GLUCANASE/CN
L4	1 S E3
L5	2 S E24, E25

L6 1109 S GLUCANASE  
 L7 1106 S L6 NOT L4,L5  
 L8 33 S L7 NOT SQL/FA  
 L9 28 S L8 NOT MXS/CI  
 L10 18 S L9 AND GLUCANASE/INS.HP  
 L11 10 S L9 NOT L10  
 L12 1 S TREHALOSE/CN  
 L13 19 S C12H22O11/MF AND GLUCOPYRANOSIDE AND GLUCOPYRANOSYL  
 L14 10 S L13 NOT (LABELED OR 11C# OR 13C# OR 14C# OR (D OR T)/ELS)  
 L15 9 S L14 NOT OC4/ES  
 L16 9 S L12,L15  
 L17 3 S 69-65-8 OR 643-01-6 OR 133-43-7  
 L18 3 S 3458-28-4 OR 10030-80-5 OR 40866-07-7  
 E AMMONIUM SULFATE/CN  
 L19 1 S E3  
 L20 785 S 7664-93-9/CRN AND H3N  
 L21 33 S L20 AND 2/NC  
 L22 15 S L21 AND H2O4S  
 L23 10 S L22 NOT (MNS/CI OR 15N OR 13N)  
 L24 25 S L16-L19,L23  
 L25 1 S 7664-38-2  
 L26 1336 S 7664-38-2/CRN AND NA/ELS  
 L27 18 S L26 AND H3O4P AND 2/NC  
 L28 13 S L27 NOT (FNA OR MNS/CI OR PROPANEDIOL)  
 L29 1 S SODIUM CHLORIDE/CN  
 E TRIS/CN  
 L30 1 S E4  
 L31 15 S L28,L29,L30

FILE 'HCAPLUS' ENTERED AT 17:26:22 ON 29 JAN 2002

L32 339 S L1 OR L2  
 L33 991 S HEPARINASE  
 L34 90 S HEPARIN LYASE  
 L35 1069 S L32-L34  
 L36 8 S L35 AND L24  
 L37 17 S L35 AND (TREHALOSE OR MANNITOL OR MANNOSE OR AMMONIUM() (SULFA  
 L38 17 S L36,L37  
 L39 1 S L38 AND (L31 OR NACL OR (NA OR SODIUM) ()CHLORIDE OR TRIS OR (  
 L40 5 S L38 AND (L3 OR HEPARIN)  
 L41 1 S L38 AND (L4 OR L5 OR L11 OR GLUCANASE)  
 L42 5 S L39-L41  
 L43 1 S L42 AND ADDITIVE  
 L44 1 S L38 AND ADDITIVE  
 L45 1 S L43,L44  
 L46 16745 S L35 OR L4 OR L5 OR L11 OR GLUCANASE  
 L47 1 S L38 AND (L31 OR NACL OR (NA OR SODIUM) ()CHLORIDE OR TRIS OR (  
 L48 1 S L45,L47  
 L49 399 S L46 AND ADDITIVE  
 L50 908 S L46 AND STABIL?  
 L51 58 S L49 AND L50  
 L52 52 S L51 AND (PY<=1999 OR PRY<=1999 OR AY<=1999)  
 E ANTIGNANI A/AU  
 L53 2 S E4-E5  
 E CHENG E/AU  
 L54 237 S E3-E13,E51  
 E EVANS J/AU  
 L55 321 S E3,E35-E38  
 E EVANS JEF/AU  
 L56 10 S E7,E14  
 E GRIPPI N/AU  
 L57 2 S E4  
 E WONG B/AU  
 L58 39 S E3,E17,E18  
 E WONG BRYAN/AU  
 L59 7 S E5-E7  
 L60 1562 S (BECTON OR DICKINSON)/PA,CS

L61 8 S L46 AND L53-L60  
L62 1 S L61 AND L49  
L63 2 S L61 AND STABIL?  
L64 2 S L62,L63  
L65 1 S L64 NOT WINTERS ?/AU  
L66 1 S L48,L65  
SEL HIT RN

FILE 'REGISTRY' ENTERED AT 17:35:09 ON 29 JAN 2002

L67 7 S E1-E7

FILE 'REGISTRY' ENTERED AT 17:35:25 ON 29 JAN 2002

FILE 'HCAPLUS' ENTERED AT 17:35:34 ON 29 JAN 2002

FILE 'WPIX' ENTERED AT 17:35:47 ON 29 JAN 2002

E US6187553/PN

L68 1 S E3  
L69 77 S HEPARINASE  
L70 39 S HEPARANASE  
L71 107 S L69,L70  
L72 2 S L71 AND (TREHALOSE OR MANNITOL OR MANNOSE OR AMMONIUM()) (SULFA  
E TREHALOSE/DCN  
E E3+ALL  
L73 0 S L71 AND E2  
E MANNITOL/DCN  
E E3+ALL  
L74 0 S L71 AND (E2 OR 0290/DRN)  
L75 0 S L71 AND E6  
E MANNOSE/DCN  
E E3 ALL  
E MANNOSE/DCN  
E E3+ALL  
L76 0 S L71 AND (E2 OR 1616/DRN)  
E AMMONIUM SULFATE/DCN  
E E3 ALL  
E AMMONIUM SULFATE/DCN  
E E3+ALL  
L77 0 S L71 AND (E2 OR 1786/DRN)  
E SODIUM PHOSPHATE/DCN  
E E4+ALL  
L78 0 S L71 AND (E2 OR 1688/DRN)  
L79 0 S L71 AND (E4 OR 1689/DRN)  
L80 0 S L71 AND (E6 OR 1690/DRN)  
E SODIUM CHLORIDE/DCN  
E E3+ALL  
L81 1 S L71 AND (E2 OR 1706/DRN)  
E TRIS/DCN  
E E3+ALL  
L82 0 S L71 AND (E2 OR 0418/DRN)  
L83 9 S L71 AND ((NA OR SODIUM)()) (PHOSPHATE OR CHLORIDE) OR NACL OR T  
L84 1 S L72 AND L81,L83  
L85 9 S L72,L81,L83 NOT L84  
L86 1 S L85 AND STABILISED HEPARINASE/TI  
L87 2 S L68,L86 AND L68-L86

FILE 'WPIX' ENTERED AT 17:43:07 ON 29 JAN 2002

FILE 'DPCI' ENTERED AT 17:43:18 ON 29 JAN 2002

E US6187553/PN

L88 1 S E3  
E UW5262325/PN  
E US5262325/PN  
L89 1 S E3  
L90 2 S L88,L89

FILE 'DPCI' ENTERED AT 17:44:26 ON 29 JAN 2002